

Environmental Product Declaration

In accordance with ISO 14025 for:

GreenWeight from Ergin Makina

EPD registration number: S-P-4105 Publication date: 01.10.2021 Valid until: 30.09.2026



GreenWeight



ENVIRONMENTAL PRODUCT DECLARATIONS

Programme

EPD Turkey, a fully aligned regional programme.

www.epdturkey.org



THE INTERNATIONAL EPD® SYSTEM

The International EPD® System

www.environdec.com

EPD Turkey:

SÜRATAM – Turkish Centre for Sustainable Production

Research & Design

Nef 09 B Blok No:7/15

34415 Kagithane/Istanbul

Turkey

The International EPD® System

EPD International AB

Box 210 60

SE-100 31 Stockholm

Sweden

Programme Operator

Geographical Scope

Global

UN CPC Code

UN CPC 429 (Other fabricated metal products)

Product Category Rules (PCR)

PCR 2014:10 Fabricated steel products, except construction products, machinery and equipment, Version 2.11

Independent third-party verification of the declaration and data, according to ISO 14025:2006

EPD process certification ()

EPD verification (X)

Third party verifier

Professor Vladimír Kocí

Approved by

The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier

Yes ()

No (X)

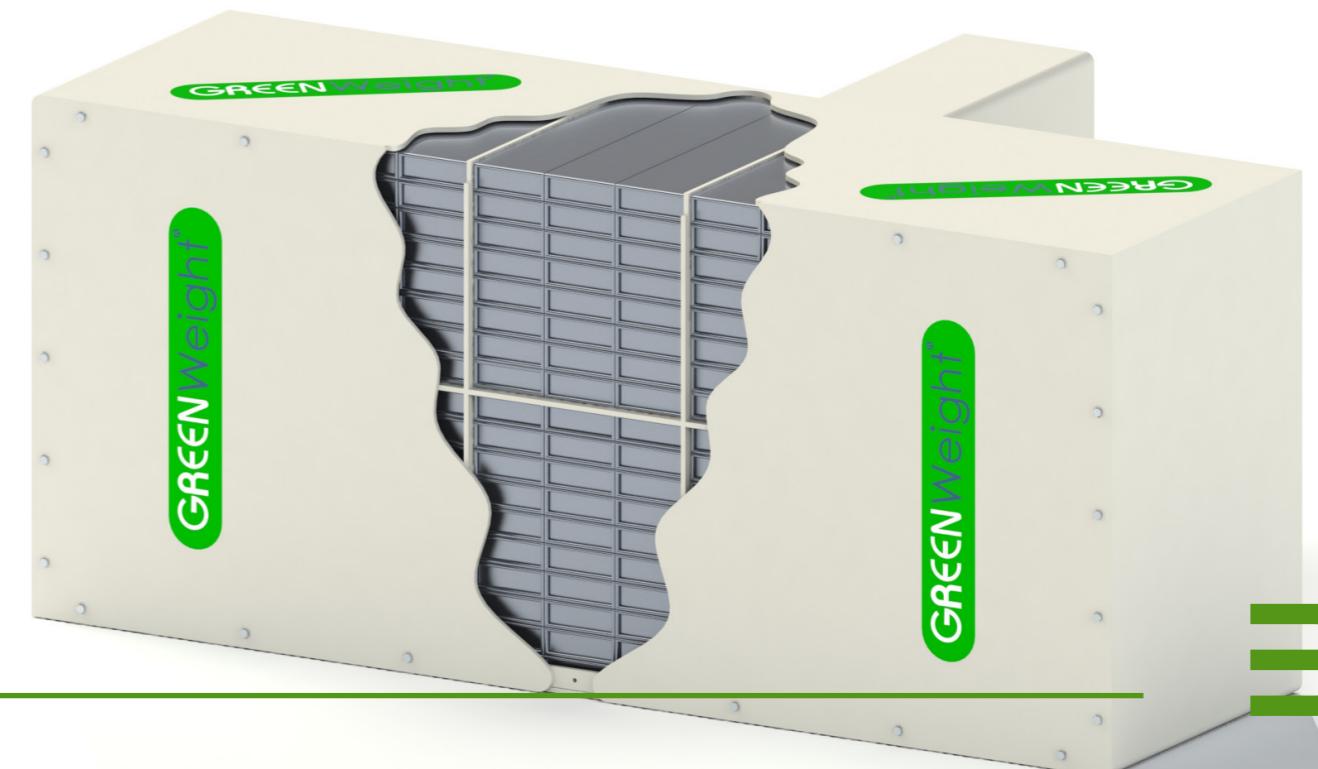
EPD Owner

Ergin Mak. İnş Ltd. Şti.

Organize San. Bölgesi
1, Tümsan Sitesi 7, Blok No 13
Başakşehir-İstanbul

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs for textile products are primarily intended for use in B2B communication, but their use in B2C communication under certain conditions is not precluded. For EPDs intended for B2C communication, refer to ISO 14025.

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About Company

Ergin Makina has been carrying out engineering activities in many fields in Turkey for more than 50 years. The services we have provided are generally steel manufacturing and assembly, mechanical services and our patented counterweight production for elevators, cranes, etc.

Our steel fabrication and assembly activities include design, engineering, procurement, construction management, installation, testing and commissioning for the industrial, commercial and other projects.

Our mechanical service includes piping, pressure vessel manufacturing, vein and actuator maintenance and repair, other mechanical maintenance, repair and commissioning works.

GreenWeight is basically an environmentally friendly counterweight solution for elevators and cranes. Our patented technology reduces CO₂ emissions compared to conventional methods.

All our commercial activities are carried out with the highest quality materials and the best labor available in today's market. We use advanced simulation and CAE software for our products to reach optimum design and quality. We have over 35 experienced employees with a wide range of skills and abilities that enable us to meet any challenge in the field.

Ergin Makina's R&D department is in close contact with universities and laboratories. In addition to our professional engineers and experienced designers, we also receive regular consultancy services from Istanbul Technical University. Our R&D projects are supported by The Scientific and Technological Research Council of Turkey (TÜBİTAK).

Ergin Makine always offers its services based on the principles of customer satisfaction and trust. Ergin Makina reveals its vision of being a regional leader especially in the sectors it serves. As a result of this, our aim is creating a reputable brands on a world scale.



Certificated
ISO 9001:2015
ISO 14001:2015

Product Information

Balancing Weight (Counterweight) is a component that provides the traction force between the elevator drive pulley and the suspension ropes and consists of a series of weights to balance the weight of the cabin.

Elevator counterweight is a mechanical system that provides the balance and stability of the elevator car by applying counterforce. Its purpose is to make lifting the load more efficient, saving energy and exerting less reaction on the lifting machine. The ratio of the load in the cabin is usually taken as 50% of the rated load.

Two types of elevator filler weights are produced, with and without handles. The cross-sectional areas of the filler weights are 50x150 mm and production can be made from 250 mm to 980 mm in length.



Without handle



With handle

Technical specifications and dimension of filler weight without handle :

Dimensions			Weight (+/- 1 kg)	Density (g/cm ³)
Length (+/- 5 mm)	Width (+/- 3 mm)	Thickness (+/- 3 mm)		
570 mm	150 mm	50 mm	29.5 kg	6.8-7.0
670 mm			34.5 kg	
770 mm			40.5 kg	
870 mm			44.5 kg	

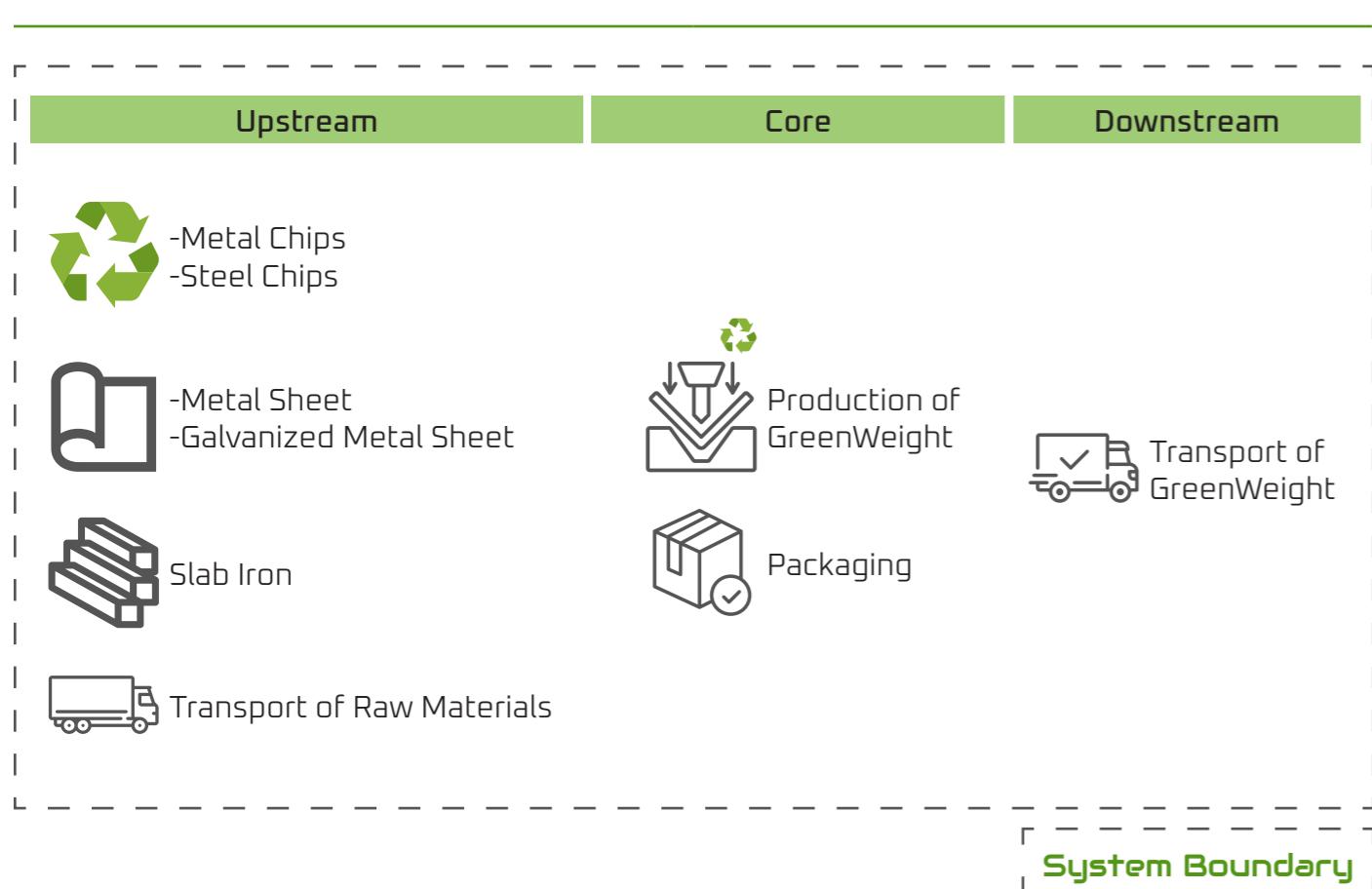
Technical specifications and dimension of filler weight with handle :

Dimensions			Weight (+/- 1 kg)	Density (g/cm ³)
Length (+/- 5 mm)	Width (+/- 3 mm)	Thickness (+/- 3 mm)		
670 mm	150 mm	50 mm	30.5 kg	6.8-7.0
770 mm			35.5 kg	
870 mm			40.5 kg	
970 mm			45.5 kg	

The lenght of the filler weight could be customized from 250 mm to 980 mm.

LCA Information

Functional Unit	1 tonne of counterweight for elevators.
Time Representativeness	2021
Database(s) and LCA Software Used	Ecoinvent 3.6, TLCID (Turkish Lifecycle Inventory Database) and SimaPro 9.1
System Boundaries	Cradle to Gate - Production of raw materials - Transport of raw materials - Production - Transport of product
Allocation	No allocation performed
Cut-Off Rules	No cut-off rule was applied within the LCA study underlying this EPD.



System Description

Upstream

Main raw materials of GreenWeight are metal scraps sawdust, steel scrap, metal sheet, galvanized metal sheet and slab iron.

Metal chips sawdust and steel scrap are main materials used in GreenWeight that makes the product more sustainable against its alternatives. Only collection of these scraps and their transport is relevant for the upstream. GreenWeight is produced in an industrial zone and all the scraps used supplied from the same industrial zone. So, the second point makes GreenWeight a more sustainable product is the fact that the transport of scrap is rather minimal. In fact, this distance is assumed to be 8 km in this assessment.

Core

At core process, all the raw materials assembled and covered with galvanized metal sheet. During the production of GreenWeight, no waste occurs and not any heating source is required during forming process. Only electrical energy is utilized owing to the production technology which were developed by Ergin Makina.

For the packaging, reused pallets and steel packing strip are used.

Downstream

GreenWeight products are transported to the end-users by truck. Average distance for the transportation of end product was taken as 89 km based on the data collected from the Company for 2020.



Environmental Performance

Potential Environmental Impact

Parameter	Unit	Upstream	Core	Downstream	Total
Global warming potential (GWP)	Fossil	kg CO ₂ eq.	271	84.1	15.5
	Biogenic	kg CO ₂ eq.	0.23	0.15	4.29 × 10 ⁻³
	Land use and trans.	kg CO ₂ eq.	0.15	0.45	5.45 × 10 ⁻³
	Total	kg CO ₂ eq.	272	84.7	15.5
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC-11 eq	18.4 × 10 ⁻⁶	2.82 × 10 ⁻⁶	2.77 × 10 ⁻⁶	24 × 10 ⁻⁶
Acidification potential (AP)	kg SO ₂ eq.	5.56	0.42	54.4 × 10 ⁻³	6.03
Eutrophication potential (EP)	kg PO ₄ ³⁻ eq	1.18	0.26	11.9 × 10 ⁻³	1.45
Photochemical oxidant formation potential (POFP)	kg NMVOC	1.3	0.21	59.6 × 10 ⁻³	1.56
Abiotic depletion potential – Elements	kg Sb eq	7.87 × 10 ⁻³	21.3 × 10 ⁻⁶	61.7 × 10 ⁻⁶	7.95 × 10 ⁻³
Abiotic depletion potential – Fossil resources	MJ, net calorific value	2930	963	230	4120
Water scarcity potential	m ³ eq	97.1	25.1	1.22	123

Global Warming Potential was calculated using IPCC 2013 method with a timeframe of 100 years. Eutrophication, Abiotic Depletion Fossil Fuels and Abiotic Depletion Elements were calculated with CML 2001 baseline method. Acidification was calculated using fate not included version in CML 2001 non-baseline method. Photochemical Oxidant Formation potential was calculated with POFP, LOTOS-EUROS as applied in ReCiPe 2008. Water Scarcity was calculated with AWARE method.

Use of Resources

Parameter	Unit	Upstream	Core	Downstream	Total
Non renewable, fossil	MJ, net calorific value	2940	964	230	4130
Non-renewable, nuclear	MJ, net calorific value	188	19	3.94	211
Non-renewable, biomass	MJ, net calorific value	35.1 × 10 ⁻³	1.47 × 10 ⁻³	10.5 × 10 ⁻³	47.1 × 10 ⁻³
Renewable, biomass	MJ, net calorific value	41.6	2.39	0.92	44.9
Renewable, wind, solar, geothermal	MJ, net calorific value	17.2	28.7	0.33	46.3
Renewable, water	MJ, net calorific value	12.9	90.8	1.49	221
Non Renewable	MJ, net calorific value	3120	983	234	4340
Renewable	MJ, net calorific value	58.9	31.1	1.26	91.3

Energy calculations were obtained using Cumulative Energy Demand (LHV) v 1.00, which is present in SimaPro's latest version. Net freshwater used was calculated from the life cycle inventory results.

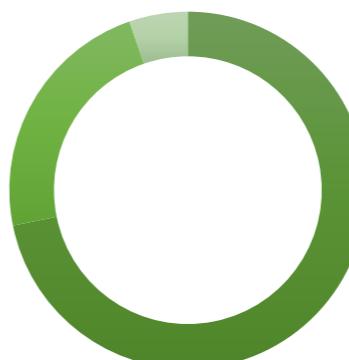
Global Warming Potential



■ Upstream (73%) ■ Core (23%) ■ Downstream (4%)

- 73% of GWP comes from upstream (raw material production and transport)
- 23% of GWP comes from core processes (core production processes)
- 4% of GWP comes from downstream (transport of end product)

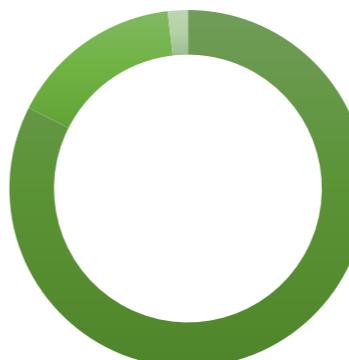
Energy Resource Use



■ Upstream (72%) ■ Core (23%) ■ Downstream (5%)

- 72% of primary energy used at upstream (raw material production and transport)
- 23% of primary energy used at core processes (core production processes)
- 5% of primary energy used at downstream (transport of end product)

Net Use of Fresh Water



■ Upstream (82%) ■ Core (16%) ■ Downstream (2%)

- 82% of water used at upstream (raw material production and transport)
- 16% of water used at core processes (core production processes)
- 2% of water used at downstream (transport of end product)

Waste Production and Output Flows

Waste Production

Parameter	Unit	Upstream	Core	Downstream	Total
Hazardous waste disposed	0	0	0	0	0
Non-hazardous waste disposed	0	0	0	0	0
Radioactive waste disposed	0	0	0	0	0

Hazardous and Non-Hazardous waste amounts are allocated from yearly total waste amounts.

Output Flows

Parameter	Unit	Upstream	Core	Downstream	Total
Components for reuse	kg	0	0	0	0
Material for recycling	kg	0	0	0	0
Materials for energy recovery	kg	0	0	0	0
Exported energy, electricity	MJ	0	0	0	0
Exported energy, thermal	MJ	0	0	0	0

Output flow amounts are allocated from yearly total waste amounts.

Other Information

Toxicity Impacts

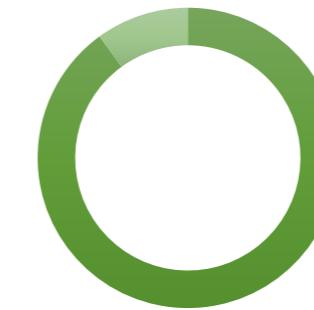
Parameter	Unit	Upstream	Core	Downstream	Total
Human toxicity, cancer	cases	69.3×10^{-6}	6.36×10^{-6}	0.52×10^{-6}	76.2×10^{-6}
Human toxicity, non-cancer	cases	81.6×10^{-6}	15×10^{-6}	2.25×10^{-6}	98.8×10^{-6}
Freshwater ecotoxicity	PAF.m ³ .day	$1.74E \times 10^6$	$693E \times 10^3$	27.8×10^3	2.46×10^6

Toxicity impacts were calculated using USEtox v 2.02 recommended + interim.



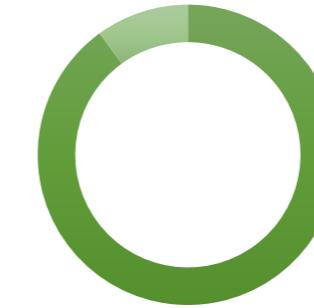
Materials in GreenWeight

Recycled Content



■ Recycled Material (90%) ■ Non-Recycled Material (10%)

Disposal



■ Recycle (90%) ■ Landfill (10%)

- GreenWeight is produced from 90% ferrous recycled materials.
- GreenWeight contains only 10% virgin ferrous material.

- GreenWeight is recycled by 90% at disposal stage.
- Only 10% ferrous materials go to landfills.



References

GPI

General Programme Instructions of the International EPD® System. Version 3.0.

EN ISO 9001

Quality Management Systems - Requirements

EN ISO 14001

Environmental Management Systems - Requirements

ISO 45001

Occupational Health & Safety Management System - Requirements

ISO 14020:2000

Environmental Labels and Declarations — General principles

ISO 14025 DIN EN ISO 14025:2009-11

Environmental labels and declarations - Type III environmental declarations — Principles and procedures

ISO 14040/44/ DIN EN ISO 14040:2006-10

Environmental management - Life cycle assessment - Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006)

The International EPD® System

The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. www.environdec.com

Ecoinvent

Ecoinvent Centre, www.ecoinvent.org

SimaPro

SimaPro LCA Software, Pré Consultants, the Netherlands, www.pre-sustainability.com

Contact Information



Programme

EPD registered through fully aligned regional programme.
EPD Turkey
www.epdturkey.org

Programme Operator

EPD Turkey
SÜRATAM – Turkish Centre for Sustainable Production Research & Design
Nef 09 B Blok No:7/15,
34415 Kagithane / Istanbul,
Turkey
www.epdturkey.org
info@epdturkey.org

Owner of the Declaration



Organize San. Bölgesi
1, Tümsan Sitesi 7, Blok No
13 Başakşehir-İstanbul
www.erginmakina.com.tr
info@erginmakina.com.tr

LCA Practitioner &

EPD Designer



Turkey Office
Lalegül Sok. No:7/18
34415 4. Levent-Istanbul,
Turkey
+90 212 281 13 33

United Kingdom Office
4 Clear Water Place
Oxford OX2 7NL, UK
0 800 722 0185
www.metsims.com
info@metsims.com

3rd Party Verifier



Professor Vladimír Kocí
LCA Studio
Šárecká 5, 16000
Prague 6 - Czech Republic
www.lcastudio.cz



GreenWeight

www.greenweight.com.tr